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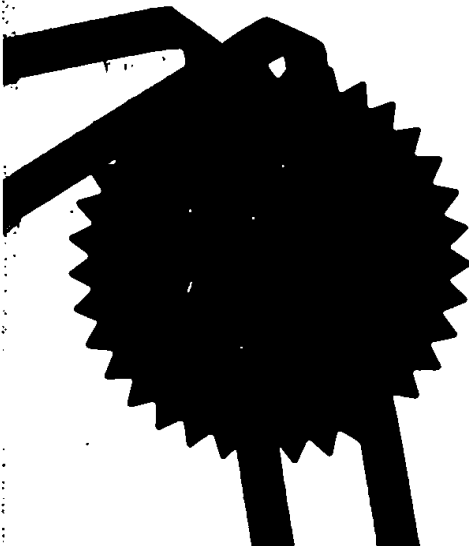
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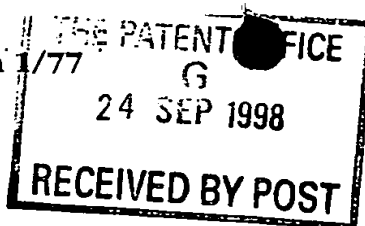
Signed

RJ Sanders

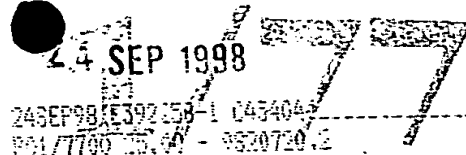
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The
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Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

9820720.2

The Patent Office

Cardiff Road
Newport
Gwent NP9 1RH

1. Your reference

FASDEC

2. Patent application number

(The Patent Office will fill in this part)

3. Full name, address and postcode of the or of each applicant (underline all surnames)

JOHN PARKES TA DELL EXPLOSIVES
REDHALL MILL COTTAGE
COLINTON DELL
EDINBURGH
EH14 1JF
0437953 3001

Patents ADP number (if you know it)

If the applicant is a corporate body, give the country/state of its incorporation

4. Title of the invention

ROCKET MOTOR EMISSION DECONTAMINATION SYSTEM

5. Name of your agent (if you have one)

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

~~AS ABOVE~~
J Y + G W JOHNSON
KINGS BOURNE HOUSE
229-231 HIGH HOLBORN
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976001

9/77 23/02/99

Patents ADP number (if you know it)

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country	Priority application number (if you know it)	Date of filing (day / month / year)
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7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application	Date of filing (day / month / year)
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8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

- any applicant named in part 3 is not an inventor, or
 - there is an inventor who is not named as an applicant, or
 - any named applicant is a corporate body.
- See note (d))

NO

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9. Enter the number of sheets for any of the following items you are filing with this form. Do not count copies of the same document

Continuation sheets of this form

Description

Claim(s)

Abstract

Drawing(s)

4 PAGES

2 PAGES

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 9/77)

Request for substantive examination (Patents Form 10/77)

Any other documents (please specify)

NIL

11.

I/We request the grant of a patent on the basis of this application.

Signature

John Parker

Date 22/9/98

12. Name and daytime telephone number of person to contact in the United Kingdom

0131-444-0038

Warning

After an application for a patent has been filed, the Comptroller of the Patent Office will consider whether publication or communication of the invention should be prohibited or restricted under Section 22 of the Patents Act 1977. You will be informed if it is necessary to prohibit or restrict your invention in this way. Furthermore, if you live in the United Kingdom, Section 23 of the Patents Act 1977 stops you from applying for a patent abroad without first getting written permission from the Patent Office unless an application has been filed at least 6 weeks beforehand in the United Kingdom for a patent for the same invention and either no direction prohibiting publication or communication has been given, or any such direction has been revoked.

Notes

- If you need help to fill in this form or you have any questions, please contact the Patent Office on 0645 500505.
- Write your answers in capital letters using black ink or you may type them.
- If there is not enough space for all the relevant details on any part of this form, please continue on a separate sheet of paper and write "see continuation sheet" in the relevant part(s). Any continuation sheet should be attached to this form.
- If you have answered 'Yes' Patents Form 7/77 will need to be filed.
- Once you have filled in the form you must remember to sign and date it.
- For details of the fee and ways to pay please contact the Patent Office.

AIM; TO MANUFACTURE AN AQUEOUS SOLUTION DECONTAMINATION SYSTEM FOR ROCKET MOTORS WHILE BURNING SAME FOR DEMILITARISATION PURPOSES.

HISTORY; Further to my inventions related to the demilitarisation of redundant munitions in a more safe and environmentally friendly manner I have considered a method for the removal and neutralising of contaminants and or poisonous matter within exhaust emissions arising from the open burning of rocket motors.

Whereas I have a patent pending related to a munitions disposal pit which employs multiples of water spray nozzles to attenuate the explosive effects from detonated munitions this new system addresses the disposal of individual rocket motors. All be it the propellant in certain rocket motors can be detonated if correctly initiated this is not a full proof method of disposal or indeed suitable for all kinds and sizes of rocket motors.

DESCRIPTION; We require a safe and environmentally friendly method of rocket motor disposal that can be adapted and used to deal with most sizes of rocket motors. This invention will allow the propellant contained inside rocket motors to burn within an enclosed water column containing a suitable chemical - or a cocktail of chemicals - which will assist in the neutralisation of noxious or poisonous arisings. This water shroud or water column along with the associated aerosolised water will also capture most particulate matter from the rocket motor emissions and cause them to be transferred into a suitable catchment and filtration system. Once filtered and neutralised the used water solution can be recycled for repeat operations.

For the purpose of description I have only outlined the systems basic function and submitted a line diagram however, this is an elementary system which is capable of dealing with rocket motors of say up to 300mm in diameter. Larger systems can be engineered for the disposal of bigger rocket motors however the underlying principles as set out in this document will still apply. I have appended as page six the engineering and scientific calculations related to a typical rocket motors performance, the water pumping system and the AFN (annular water flow nozzle.)

Prior to the actual rocket motor disposal operation taking place, namely the ignition and burning out of the encased propellant within the said rocket motor, certain demilitarisation and or reverse engineering operations must be executed upon the complete rocket propelled munition. Namely, the warhead - explosive or otherwise - must first be removed. Having removed the warhead the rockets venturi mechanism is also removed. By removing the rocket motors venturi system prior to the final disposal of the same this will allow the propellant to a; burn more quickly. b; create a less energetic propulsive flow. c; create a denser and more easily confined exhaust cloud.

To ensure maximum effect of the decontamination system the rocket motor should be held in a vertical mode with the rear or exhaust end of the motor facing skywards. The rocket motor securing mechanism must be engineered so as to prevent the rocket motor body from moving once the propellant is ignited. By facing the rocket motor downwards towards the earth expended energy from the rocket motor will drive the rocket motor body towards the ground and not upwards. Although a vertical mode is desirable when burning off rocket motors the system could be manufactured to operate in a vertical plane but this would entail engineering a heavier securing mechanism to prevent the rocket motor from going propulsive. There is no point in trying to combat nature when this can be avoided.

REQUISITE EQUIPMENT AND MACHINERY.

- 1/ High volume high pressure water pump or pumps.
- 2/ Submergible water pump or pumps
- 4/ One annular flow high pressure water nozzle assembly (AFN)
- 5/ High and low pressure water pipelines
- 6/ Rocket motor securing assembly
- 8/ Filtration equipment
- 9/ Catchment and settlement tank/s
- 10/ Water supply tank

BREAKDOWN OF FUNCTIONS

High pressure high volume water pump/s;

To supply a high pressure high volume flow to the annular flow nozzle located around the rocket motor securing mechanism. Can be driven by a fuel powered engine or by electricity however, for field operations we prefer to use a diesel engine.

Submergible pump or pumps

To return filtered water from the settlement tank and filtration system to the storage tank.

Annular flow high pressure water assembly

To create a complete but hollow water shroud or mass of aerosolised water around the entire rocket motor exhaust emissions.

High and low pressure water pipelines

To a; deliver high pressure high volume water from the water storage tank to the AFN (annular flow nozzle)

To b; return filtered water from the settlement tank and filtration system to the water storage tank.

Rocket motor securing assembly

To secure the rocket motor in a fixed position and to support the annular flow nozzle AFN.

Catchment and settlement tank/s

To hold the recovered water and provide a means of natural sedimentation.

Filtration equipment

To filter used and contaminated water after it has been collected from the settlement tank and prior to it being returned to the main storage tank.

Water supply tank

To supply water to the high pressure high volume water pump and to facilitate the pre-mixing of the neutralising / decontaminating agent or agents therein.

MODUS OPERANDI

The aim of my system is to provide a means of capturing noxious and poisonous gasses and particulate materials as they are exhausted from the burning rocket propellant when encased in a rocket motor body. Once captured, the suitable additives having been pre-added to the water, they will assist in neutralising all the substances that are harmful to the environment. To do this effectively we must first throw up a comprehensive water shroud around the exhaust plume and prohibit the exhaust emissions from mixing with the surrounding atmosphere.

The captured material once having fallen to *earth*, it will be allowed to flow towards a catchment tank or tanks where sedimentary action will be allowed to take place. To facilitate this the surface area surrounding the rocket motor burn site must be provided with a waterproof pavement or covered with a suitable heavy duty membrane.

Located within the settlement tank/s will be a submersible pump/s however, these pumps will be stood off from the bottom of the tank/s so as not to draw up the impurities held within the sediment layer. By utilising alternate catchment / settlement tanks this will allow the sediment layer to be periodically removed for further treatment such as neutralisation or land fill once the material has been properly stabilised.

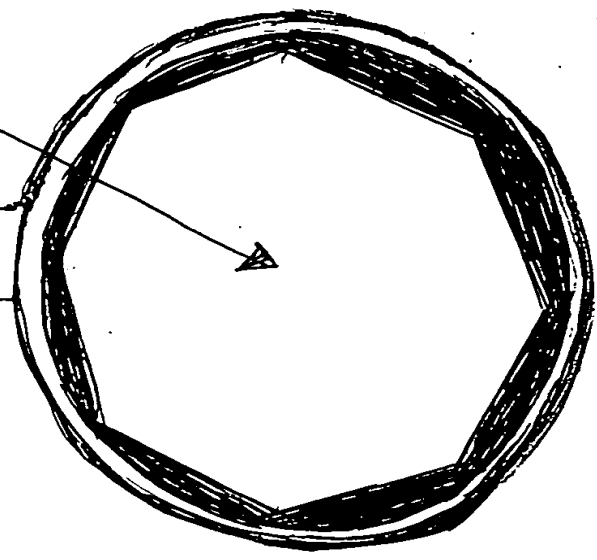
NB Where we mention water in this process we do not rule out other suitable fluids but water is by far the cheapest medium. Apart from the initial filling and topping up of the main tank due to evaporation losses, all the water employed in this process will have a suitable neutralising or cleansing agent added to the same prior to being used.

DRAWINGS APPENDED AS PAGE FOUR AND FIVE

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ROCKET MOTOR
LOCATED HERE

HIGH PRESSURE SUPPLY



ANNULAR FLOW NOZZLE (PLAN VIEW)

WATER SHROUD

ROCKET MOTOR
EXHAUST
PLUME

ROCKET MOTOR CLAMPING
MECHANISM

HP SUPPLY LINE

ANNULAR FLOW NOZ.

ROCKET MOTOR

SIDE VIEW

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Creation date: 10-19-2004
Indexing Officer: GSRIDHAR - GAYATHRI SRIDHAR
Team: OIPEBackFileIndexing
Dossier: 09392925

Legal Date: 10-18-1999

No.	Doccode	Number of pages
1	FOR	12
2	FOR	6
3	FOR	6

Total number of pages: 24

Remarks:

Order of re-scan issued on

